

## **SECTION 705 GUARDRAIL AND GUIDE POSTS**

**705.01 GUARDRAIL.** Furnish metal beam and cable guardrail materials meeting the Contract requirements.

**705.01.1 Steel Beams and Fittings.** Furnish steel beam guardrail meeting AASHTO M 180, Class A, Type 1 requirements. Supply rail in lengths that place the splices on posts. Shape rail to be erected on curve radii less than 150 feet (45.75 m) before erecting.

Use ASTM A 307 bolts with ASTM A 563, Grade A or better nuts. Use ANSI B27.2, Type A plain steel washers.

Galvanize all bolts, nuts, washers, and fittings meeting ASTM A 153 or B 695 (Class 50) requirements.

Furnish rounded end sections, buffer sections, and terminal connectors meeting AASHTO M 180, Class B, Type 1 requirements.

**705.01.2 Wood Posts and Blocks.** Furnish wood posts and blocks made from Douglas Fir, Hemlock, Ponderosa Pine, Spruce, Larch, or Lodgepole pine. Posts must be straight, sound, free from defects and meet the shapes and dimensions specified in the Contract.

Meet the Western Wood Products Association requirements, or equivalent grading rules, all of which must meet ASTM D 245.

Assure the posts surfaces do not vary more than 1-inch (25 mm) from a straight line connecting the ends. Saw the posts before treating. The posts must be seasoned to accept the specified treatment. Furnish posts and blocks treated with a minimum 5% by weight pentachlorophenol solution or Chromated Copper Arsenate (CCA), type B or C, or Ammoniacal Copper Arsenate (ACA) meeting AWWA standards. The minimum penetration depth is ½-inch (13 mm). Do not paint posts unless specified.

Meet the following strength test: test as a simple beam on a 24-inch (610 mm) span with center loading applied to the post back; it must support at least 30,000 lbs (13,620 kg) before failure.

**705.01.3 Concrete Posts.** Furnish precast concrete posts meeting the Contract requirements. Use Class "DD" concrete or concrete of equal strength meeting Section 551 requirements. Manufacture, transport, and handle guardrail posts meeting Section 554 requirements. Use reinforcing steel meeting Section 711 requirements.

**705.01.4 Lightweight Concrete Guardrail Posts.** Lightweight aggregates may be used in manufacturing guardrail posts.

Produce both fine and course aggregates for lightweight concrete by expanding, calcining, or sintering blast furnace slag, clay, diatomite, shale, or slate.

Meet AASHTO M 195 aggregate requirements. Use separate fine and course aggregate. Use fine aggregate in the No.4 (4.75 mm) to 0 size. Use course aggregate of either ¾-inch (19.0 mm) to No.4 (4.75 mm) or ½-inch (12.5 mm) to No. 4 (4.75 mm).

Meet a minimum compressive strength of 3,000 psi (20.7 MPa) (equal to class "DD" concrete) with a maximum absorption of 15% by volume and a maximum unit weight of 115 pounds per cubic foot (1,864 kg per cubic meter). Aggregate pre-wetting may be required.

Use reinforcing steel meeting Section 711 requirements. Steel size and shape is specified in the Contract.

The AASHTO M 195 Freeze-Thaw test is not required.

**705.01.5 Steel Posts.** Furnish steel posts for cable guardrail meeting the Contract requirements.

**705.02. Wire Rope and Connecting Hardware.** Furnish wire rope and hardware for cable guardrail meeting the Contract requirements.

**705.03. Wood Treatment and Painting.**

**705.03.1 Wood Treatment.** Furnish wood posts and blocks pressure treated meeting Subsection 706.04.1, with a 5 % by weight pentachlorophenol solution Chromated Copper Arsenate (CCA), type B or C, or Ammoniacal Copper Arsenate (ACA) meeting AWPA standards. Chamfer and perform other required framing and boring of bolt holes before post treating. Plug drill holes used for determining preservative penetration depth with tight fitting treated wood plugs. The requirements of Subsection 706.04.2 for incising, do not apply to Ponderosa pine sawn wood posts.

**705.03.2 Painting.** Use paint and perform painting meeting Subsection 612.03.5 (C)(2) requirements when specified.

**705.04 GUIDE POSTS.**

**705.04.1 Wood Posts.** Furnish wood posts meeting Subsection 705.01.2 and 705.03 requirements. Size and shape are specified in the Contract.

**705.04.2 Flexible Guideposts.** Furnish flexible guideposts meeting the Contract requirements and the following:

The posts must be a white seamless polyethylene extrusion with a minimum 5/32-inch (4 mm) wall thickness having a minimum weight of one pound per foot (1.49 kg/m). The post cross section may be round, triangular, or other shape providing at least 4-inches (100 mm) viewable width.

Erect permanent installations meeting the Contract requirements.

Epoxy-cement or nail temporary installations to the pavement surface.

**705.04.3 Hardware.** Furnish backplates or faceplates for posts meeting the Contract requirements.

Furnish bolts, nuts, or studs for fastening the backplate to the post, galvanized meeting ASTM A 153 or B 454 (Class 50) requirements or use cadmium plated. Furnish nuts and studs that are "vandal-resistant".

**GUARDRAIL AND GUIDE POSTS**

**705.04.3**

Furnish other miscellaneous hardware galvanized meeting ASTM A 153 or B 454 (Class 50) requirements.